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# Natural Capital Accounting: the EU policy and statistical context
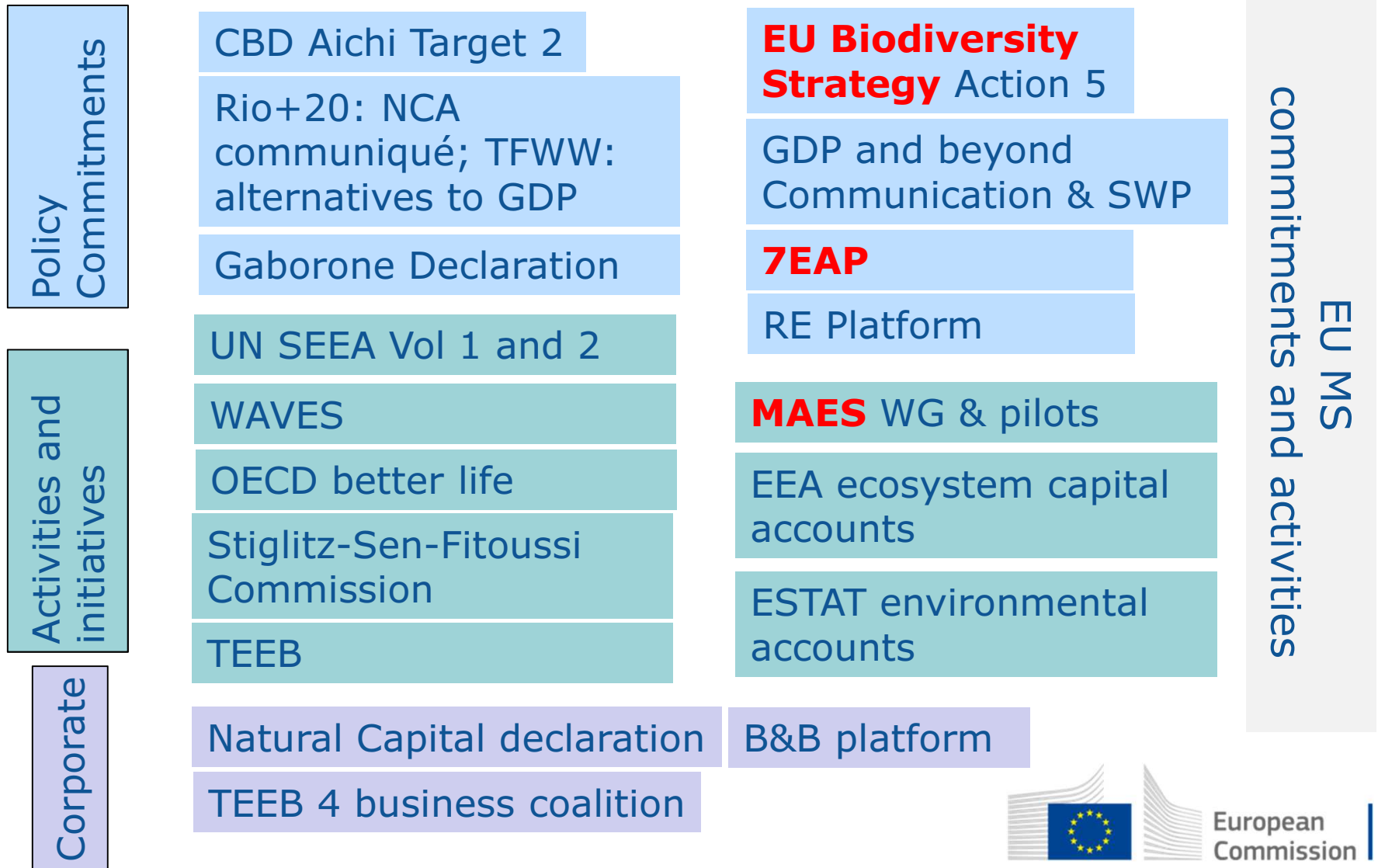
**Anton Steurer – Eurostat E2 – Environment statistics and accounts; sustainable development**

**Presentation at the London Group meeting**
**15-17 October 2014, New Delhi**

# Main elements of presentation

1. Policy at EU level (biodiversity strategy, MAES, 7th EAP)

2. Can the London Group help define what 'natural capital' means?

3. Response of statisticians at 3 levels:

   a) Valuation (Radermacher paper on LG site)

   b) Help others with accounting advice and data

   c) Involvement in physical ecosystem accounting interpreted as a massive geo-statistical data operation

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# Policy commitments and activities

Global

EU

**Policy Commitments**

CBD Aichi Target 2

Rio+20: NCA communiqué; TFWW: alternatives to GDP

Gaborone Declaration

**EU Biodiversity Strategy** Action 5

GDP and beyond Communication & SWP

**7EAP**

RE Platform

**Activities and initiatives**

UN SEEA Vol 1 and 2

WAVES

OECD better life

Stiglitz-Sen-Fitoussi Commission

TEEB

**MAES** WG & pilots

EEA ecosystem capital accounts

ESTAT environmental accounts

**Corporate**

Natural Capital declaration

B&B platform

TEEB 4 business coalition

EU MS commitments and activities

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# EU 2020 Biodiversity Strategy: Target 2

**Action 5: Improve knowledge of ecosystems and their services in the EU**

*Member States, with the assistance of the Commission, will map and assess the state of ecosystems and their services in their national territory by 2014, assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national level by 2020.*

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# EU 2020 Biodiversity Strategy and MAES

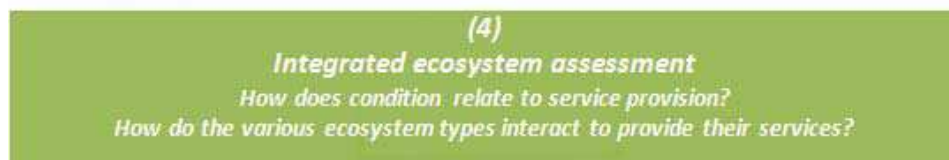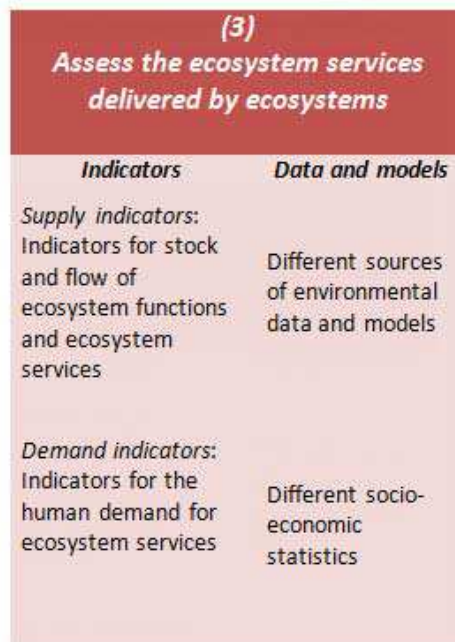Are Europe's ecosystems in good shape to continue delivering essential ecosystem services?
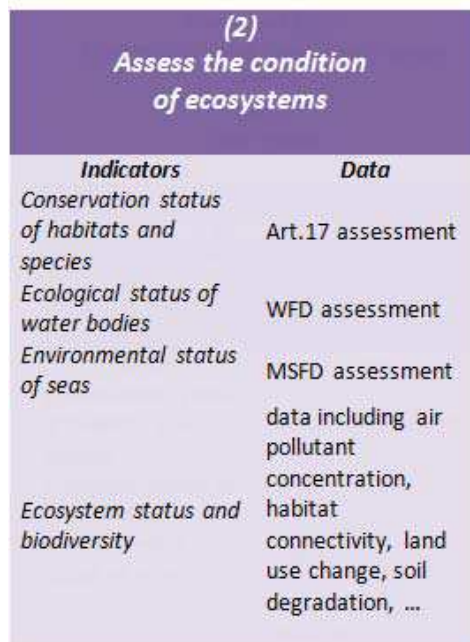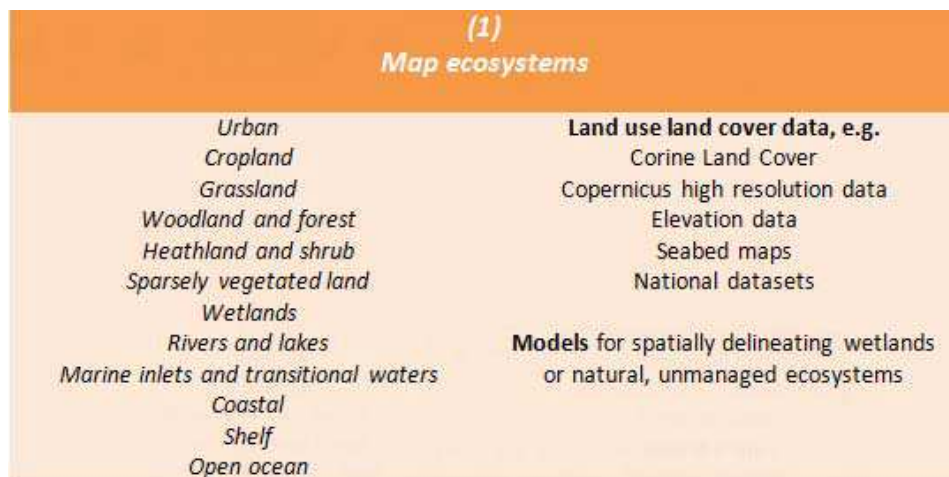
Can we value the flow of ecosystem services from ecosystems to society?

Which drivers of change increase or decrease the delivery of ecosystem services?

**We need to map and assess ecosystems and their services**

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## (1) Map ecosystems

| | Land use land cover data, e.g. |
|---|---|
| Urban | Corine Land Cover |
| Cropland | Copernicus high resolution data |
| Grassland | Elevation data |
| Woodland and forest | Seabed maps |
| Heathland and shrub | National datasets |
| Sparsely vegetated land | |
| Wetlands | **Models** for spatially delineating wetlands |
| Rivers and lakes | or natural, unmanaged ecosystems |
| Marine inlets and transitional waters | |
| Coastal | |
| Shelf | |
| Open ocean | |

## (2) Assess the condition of ecosystems

| Indicators | Data |
|---|---|
| Conservation status of habitats and species | Art.17 assessment |
| Ecological status of water bodies | WFD assessment |
| Environmental status of seas | MSFD assessment |
| Ecosystem status and biodiversity | data including air pollutant concentration, habitat connectivity, land use change, soil degradation, ... |

## (3) Assess the ecosystem services delivered by ecosystems

| Indicators | Data and models |
|---|---|
| Supply indicators: Indicators for stock and flow of ecosystem functions and ecosystem services | Different sources of environmental data and models |
| Demand indicators: Indicators for the human demand for ecosystem services | Different socio-economic statistics |

## (4) Integrated ecosystem assessment

How does condition relate to service provision?
How do the various ecosystem types interact to provide their services?

# MAES reference frame linking ecosystem condition to ecosystem services

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# Key messages and next steps

- **NCA will gain prominence** in next steps of MAES, following initial focus on biophysical mapping and assessment
- Natural Capital as defined in 7EAP clearly focuses on ecosystems, in line with MAES focus.
- Importance of maintaining link between biophysical assessment and biophysical and monetary accounts
- Need both aggregated accounts and spatially disaggregated accounts.
- **Need explicit link between 'cross-cutting' accounts e.g. Carbon, Land and Water, and ecosystem condition accounts,** following MAES categorisation

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# The European Union's seventh Environmental Action Programme to 2020 'Living well, within the limits of our planet'

**First priority of 7EAP is 'protect, conserve and enhance the European Union's <span style="color:red">natural capital</span>'**

**7EAP 'defines' natural capital as the Union's "biodiversity, including ecosystems that provide essential goods and services, from fertile soil and multi-functional forests to productive land and seas, from good quality fresh water and clean air to pollination and climate regulation and protection against natural disasters." The programme includes under the term also marine, coastal and fresh waters, land, forests and air.**

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# 7EAP 'definition' of natural capital

Seems broad – ecosystem focus but including all environmental assets (maybe not subsoil).

System of National Accounts 2008 and SEEA Central Framework 2012 do not even mention (!) natural capital. Nor Rio+20 final document.

Term is mentioned but not defined in the SEEA Experimental Ecosystem Accounting handbook completed in 2013.

Can the London Group offer an operational definition?

(Let us see next what SEEA offers - **NB SEEA CF and EEA are great works, thanks to Carl!**)

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# Coverage of 'natural capital' in SEEA?

**SEEA CF defines <u>environmental assets</u> as naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity**
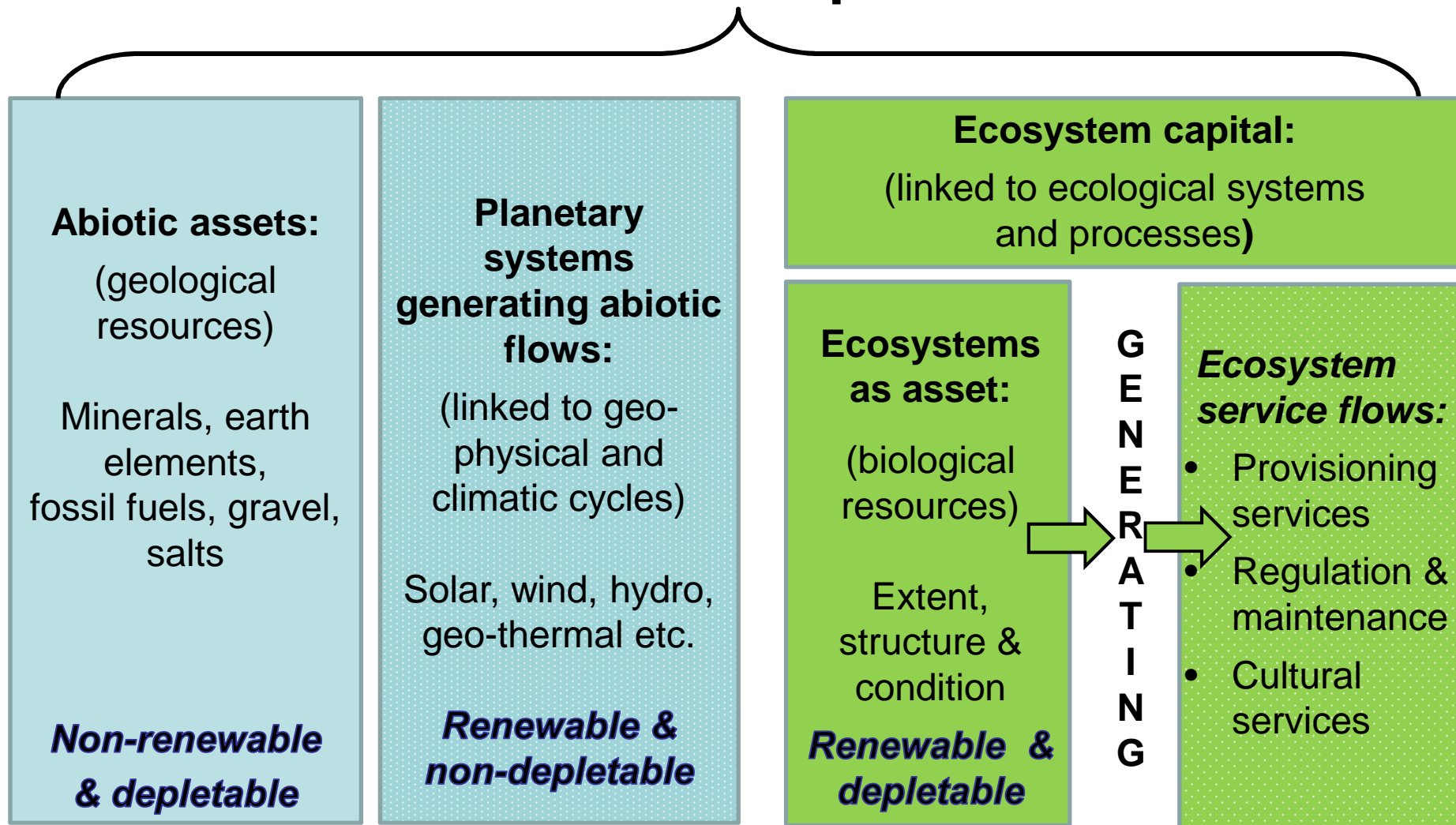
1. Mineral and energy resources (oil, gas, minerals)
2. Land
3. Soil resources
4. Timber resources (cultivated and natural)
5. Aquatic resources (cultivated and natural)
6. Biological resources (other - livestock, wild animals……)
7. Water resources (surface, ground and soil water)

**SEEA EEA adds ecosystems and in principle the atmosphere and the sea**

8. Ecosystems
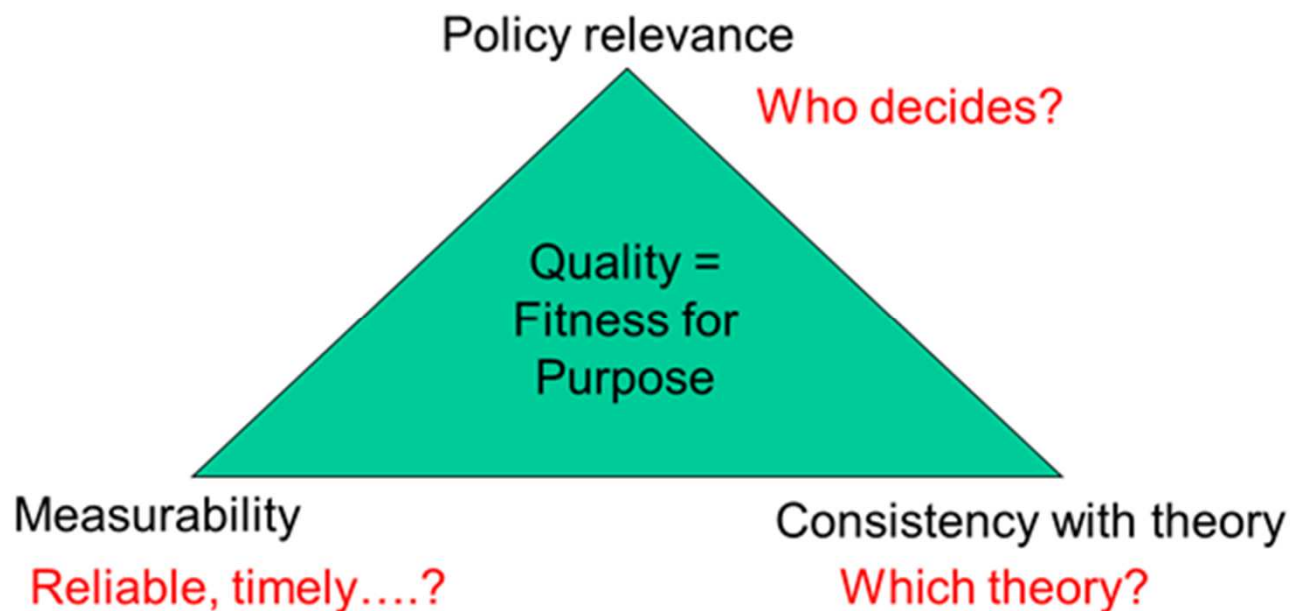9. Planetary systems (atmosphere, climate and hydrological system…)

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# Components of natural capital, or what is wrong here?

## Natural capital

**Abiotic assets:**

(geological resources)

Minerals, earth elements, fossil fuels, gravel, salts

*Non-renewable & depletable*

**Planetary systems generating abiotic flows:**

(linked to geo-physical and climatic cycles)

Solar, wind, hydro, geo-thermal etc.

*Renewable & non-depletable*

**Ecosystem capital:**

(linked to ecological systems and processes**)**

**Ecosystems as asset:**

(biological resources)

Extent, structure & condition

*Renewable & depletable*

GENERATING

*Ecosystem service flows:*

- Provisioning services
- Regulation & maintenance
- Cultural services

11 **Is it OK to have no separate space for land and soil?**

# Statistical challenges - quality of statistical information



Policy relevance

Who decides?

Quality =
Fitness for
Purpose

Measurability

Reliable, timely....?

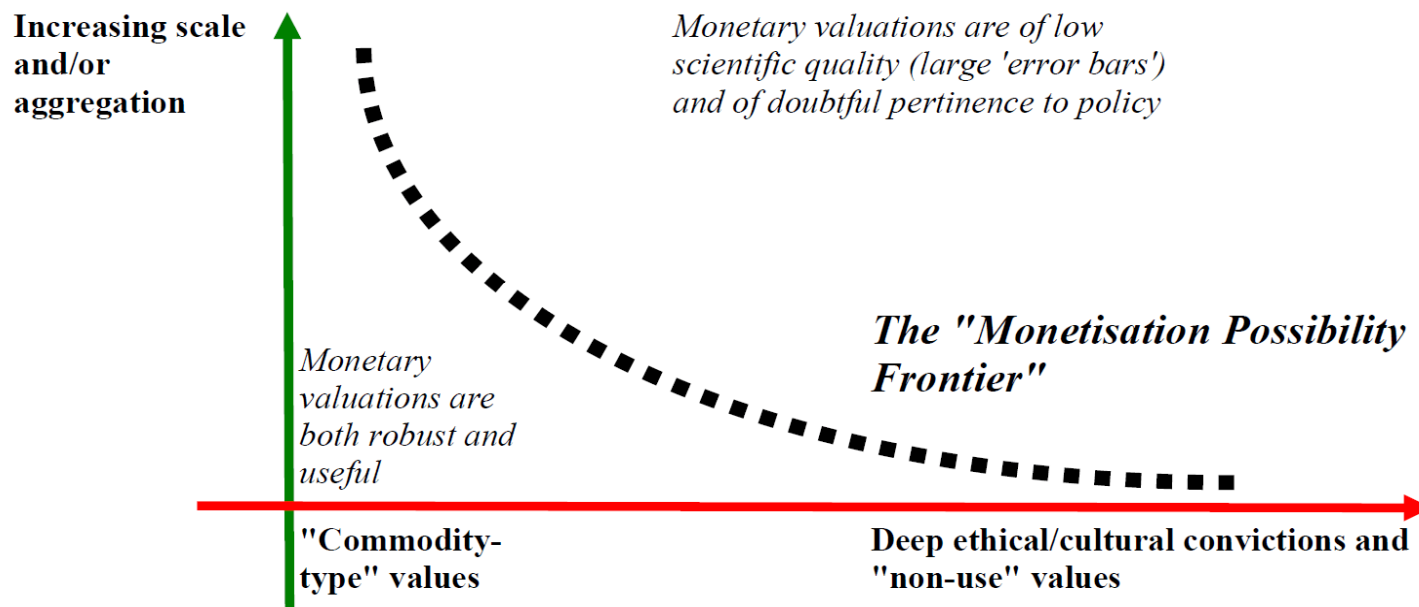Consistency with theory

Which theory?

# Mainstream economic approach

- **National focus, quantification, valuation, substitutability**
- **Massive lack of knowledge about the state and functioning of the phenomena in physical terms**
- **Valuation of these phenomena is both conceptually and practically very difficult**
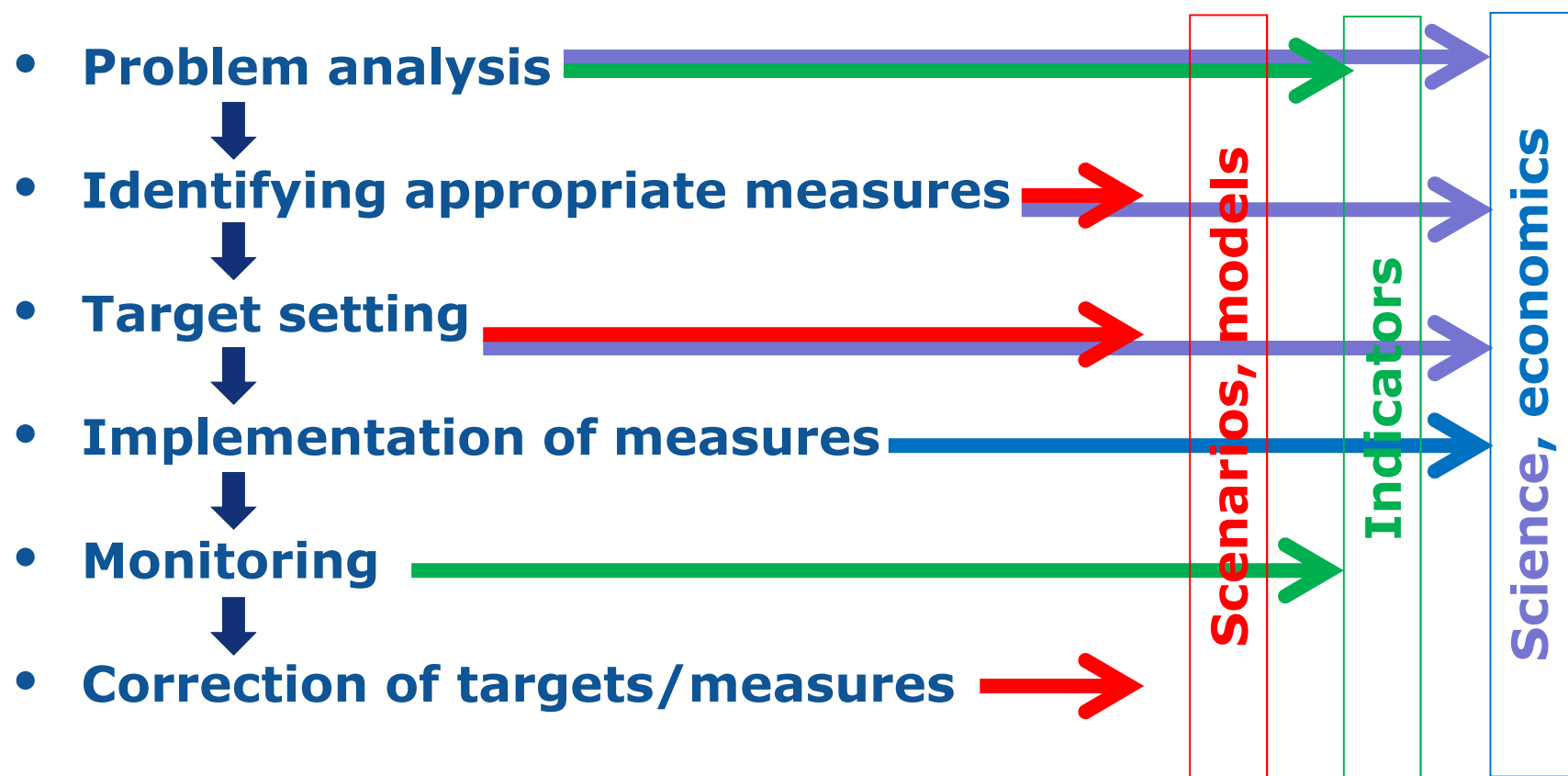- **Difficulties measuring changes over time**

Walter J. Radermacher

*Eurostat*

# Monetisation possibility frontier°



A stylised map: the 'Monetisation Possibility Frontier'

Increasing scale and/or aggregation

Monetary valuations are of low scientific quality (large 'error bars') and of doubtful pertinence to policy

Monetary valuations are both robust and useful

The "Monetisation Possibility Frontier"

"Commodity-type" values

Deep ethical/cultural convictions and "non-use" values

°... presented at London Group in 1999 in Canberra

Walter J. Radermacher

# Policy cycle (data for what?)

- **Problem analysis**
- **Identifying appropriate measures**
- **Target setting**
- **Implementation of measures**
- **Monitoring**
- **Correction of targets/measures**

**Scenarios, models**

**Indicators**

**Science, economics**

Walter J. Radermacher

# What could statisticians do?

- **Recognise: for monitoring SD 'narrow' capital approach (->net wealth change) not adequate**
- **While valuation is useful for assessment in specific cases at a smaller scale (research)**
- **Scenario techniques and modelling need data**
- **Help others with accounting knowledge and data (environment ministries and agencies)**
- **Natural capital accounts in the sense of integrated information systems – role of NSIs**
- **Indicator approaches for SD**